

7-1973

# Creativity and Its Relationship to the Origin-Pawn Variable: A Study into the Increment and Decrement of Creativity and Its Concomitant Relationship to O -P as a Function of Classroom Climate

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Creativity and Its Relationship to the Origin-Pawn  
Variable: A Study into the Increment and Decrement of  
Creativity and Its Concomitant Relationship to O-P as a  
Function of Classroom Climate

A Thesis

Presented to the  
Department of Psychology  
and the  
Faculty of the Graduate College  
University of Nebraska at Omaha

In Partial Fulfillment  
of the Requirements for the Degree  
Masters of Arts

by

Dennis Wood

July, 1973

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THESIS ACCEPTANCE

Accepted for the faculty of the Graduate College of the University of Nebraska at Omaha, in partial fulfillment of the requirements for the degree Masters of Arts.

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Creativity has been approached and studied from many different viewpoints. A number of the studies in this area are conflicting, while others are only speculative. Still, some of these discussions shed light on this very elusive variable. Collectively, these studies and discussions of creativity suggest:

- 1) that the creative individual has some personality characteristics, apart from intelligence per se, which allow him to make unusually good use of his native abilities in the solution of problems and in the living of every day life (Gardner, 1964, p. 22; c.f. also: Barron, 1963; Maslow, 1959; May, 1959; Rogers, 1961);
- 2) that these characteristics may be of real significance to the individual and to society (Sears & Sherman, 1964);
- 3) that they are less restricted by the limits of inherited capacities than is raw intelligence and;
- 4) that they should be separated from intelligence (Ripple & May, 1962).

Further evidence for the validity of the conceptual distinction between IQ and creativity is presented by Goodale (1970). He reports two studies, one by Terman (1954) and the other by Getzels and Jackson (1962), both of which demonstrate the separate influences of creativity and intelligence. These two studies, concludes Goodale, give support to teaching methods which would foster and cultivate creativity in individuals while at the same time developing intelligence.

However, the separation of IQ and creativity is often not clearly made. From their review and empirical analysis of the literature on creativity, Wallach and Kogan (1965, Wallach (1968), and Wallach (1970)

concluded that researchers and educators alike have failed to separate creativity as a distinct entity from intelligence. The authors cite work by Cline, Richards and Abe (1962), Guilford (1956, 1959, 1963, 1967), Thorndike (1963), Torrance and Gowan (1963), and Torrance (1966) as examples of this failure to separate creativity and IQ. In addition to this, Wallach (1970, p. 1239) argues that great confusion related to the topic of creativity has been sown by the Getzels and Jackson research, and that their tests of creativity produce a composite score which "constitutes a second - and less reliable - measure of general intelligence." Both Wodtke (1964) and Harvey et. al. (1970) reach the same conclusion in relation to Torrance's tests of creativity and these authors express serious reservations concerning what Torrance asserts his test measure and what they found to be the actual case in their research.

In view of these considerations, Wallach and Kogan have proposed that creativity be further investigated and have constructed the following assumptions to aid them in their research:

- 1) Creativity is most prevalent in a task-orientation context.
- 2) Creativity reveals itself in situations that are free of evaluation, coercion and time limits. A component of creativity is permissiveness and playfulness.
- 3) Creativity can be defined as an associational concept that focuses upon one's ability to generate or produce associative content that is plentiful and that is unique, within a criterion of task relevance.
- 4) Creativity is a cohesive and unitary dimension of individual differences which is relatively distinct from the concept of general intelligence.



The last two points differentiate Wallach and Kogan's theory of creativity from that theory which employs a cultural frame of reference and insists that a creative product must be novel to both the individual and to society and that, in addition, it must be useful. More specifically, according to Torrance (1962), who is the leading representative of this school of thought, in order to be called "creative", an activity must result in something that is culturally, as well as individually, novel and useful.

These four points also place Wallach and Kogan in that genre of thought which views and defines creativity within a personal or existential context, i.e., creativity involves novelty or uniqueness, but placed in a personal frame of reference. A product may be a creative one if it is new or novel to the individual involved, if it is his own creation, if it is expressive of him rather than dictated by someone else. Its social recognition and cultural impact may be zero, but if it is a unique personal experience, it is creative (Hampden-Turner, 1970; Maslow, 1959; May, 1959, Rogers, 1961). A further expression of this existential philosophy is that mentioned by Telford and Sawrey (1972, p. 156) in their brief summary of a portion of Maslow's theory which emphasizes that creativeness is a universal characteristic of individuals. Each individual has his own originality or inventiveness that has unique characteristics. For Maslow and for others as well, the creativeness of the self-actualized individual is similar to the naive creativeness of unspoiled children. All persons are said to possess the potentiality for creativeness at birth, but most lose it as they become enculturated.

Carl Rogers (1961, p. 350) defines creativity as a process

"that is the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other."

This definition is in accordance with that definition of creativity presented by Wallach and Kogan; however, Rogers carries the implications further by desiring to foster self-actualizing and self-actualization in an educational setting by focusing on the creative growth of the self and the synergic relationship of the individual with society (Drews, 1968a, p. 97).

As Rogers views it, self-actualization describes man's tendency or motivation for creativity - the directional trend which is evident in all organic and human life: the urge to expand, extend, develop, and mature. Self-actualization is a process which tends to express and activate all the capacities of the organism or of the self (Rogers, 1961, p. 351), and in this sense what Rogers has to say about self-actualization is very similar to Maslow's view of self-actualization.

Piaget describes this growth propensity as the "need" of the organism to cognize which, for Piaget, is an assimilatory activity whose essential nature is to function and then to perpetuate itself by more functioning. It is the very nature of assimilation that the organism develops schemas (structuring of the environment) which, once created, maintain themselves by assimilatory functioning (Flavell, 1963, pp. 78-80). For Piaget, assimilation is the dominant component of intelligence.

Rogers (1961, pp. 353-359) places what could be called facilitators of self-actualization or encouragements of assimilation into three general areas:

1) Openness to Experience

2) An Internal Locus of Evaluation

3) The Ability to Toy with Elements and Concepts; "messing around" for Holt (1967) and "symbolic play" for Piaget (1970).

Concomitantly - and this stems from the inner conditions of creativity - creativity cannot be forced, but must be permitted to emerge within contexts that support the processes of:

A) Psychological Safety and

B) Psychological Freedom.

Rogers goes on to describe that the interpersonal interactions which take place within the context of Psychological Safety and Psychological Freedom possess the qualities of:

i) Acceptance of the Individual as a Possessor of Unconditional Worth,

ii) a Climate in which External Evaluation is Absent, and

iii) Empathic Understanding.

In discussing his Origin-Pawn theory, DeCharms (1965, 1968, 1969, 1972) employs many of the same terms in describing an individual who is an Origin as Rogers does in describing the attributes of a fully-functioning, creative individual. DeCharms states that a man is not a stone nor is he a machine; man is an Origin:

An Origin has a strong feeling of personal causation, a feeling that the locus for causation of effects in his environment lies within himself. The feedback that reinforces this feeling comes from changes in his environment that are attributed to personal behavior. This is the crux of the concept of personal causation and is a powerful motivational force directing future behavior. A Pawn has a feeling that causal forces beyond his control, or personal forces residing in others, or in the physical

environment determine his behavior. This constitutes  
a strong feeling of powerlessness or ineffectiveness.  
(1968, p. 274)

From this quote and from research to be presented in the following pages, a sense of individual responsibility or of personal causation is the predominant characteristic of an individual who is considered an Origin. Along with this facet of personality also goes the characteristics of openness to experience and the capacity for and involvement with creative activity via the medium of play. In connection with this, DeCharms (1968) mentions that the environment must possess several processes or requirements if an individual is to develop into an Origin; such things as the presence of empathy, the communication of personal value and worth to others, and a fostering of the feeling of freedom compose the Origin-environment. As the reader can see, these are almost carbon copies of the processes noted by Rogers; however, their vocabulary and the research behind them are a little different.

A more detailed linking of the theories of Rogers and DeCharms will be presented over the next several pages. I am going to theoretically and empirically demonstrate a point-for-point correspondence between those designators of creativity emphasized by Rogers and those designators of Originness emphasized by DeCharms. With this in mind, it seems that the above definition of the O-P variables closely parallels Rogers' insistence for an Openness to Experience (1). This relationship is not directly based on what these two authors have stated, but rather the conceptual link is made via the work of Rokeach (1960, p. 58) whose description of "openness" and of an "open-minded" individual resembles DeCharms' description of Originness. Further, the association of An

Internal Locus of Evaluation (2) and Psychological Freedom (B) to Origin-ness can be demonstrated if one considers DeCharms' definition of personal causation and some research which he cites (DeCharms, 1965, p. 243) dealing with a study conducted by McClelland which found that individual responsibility (An Internal Locus of Evaluation) is not necessarily precluded in working for a group (school classroom) or an organization, as long as the individual can feel free (Psychological Freedom) to initiate action and make decisions contributing to group success.

Also the concept of playfulness has definitely influenced DeCharms' notion concerning the gestalt of an Origin. Says DeCharms,

"We must try to school ourselves in the discipline of conceiving of certain activities, even some that demand great expenditure of energy, as sought for their own sake, as standing by themselves as desirable, without having to lean on the crutch of a desirable outcome. Play and games come closest to giving us the concept we need, and fun comes closest to describing the affective component... We have assumed that some behaviors are apparently done for their own sake, and that one class of behavior that appears to be done for its own sake is behavior resulting from striving for personal causation, behavior that results in environmental change that is controlled by the actor. Of all possible behaviors that demonstrate a change effected by the actor, those will be preferred that result in maximum evidence of the effectiveness of the actor." (1968, pp. 327-328)

Earlier in his book, DeCharms (1968, p. 273) mentions that play that is forced becomes work; if one could choose his work without regard to external pressures and necessity, it would take on many of the aspects of play because one of the major components of the distinction between work and play is that work is something you do because you must while play is something you do because you want to. And in discussing Gilbert Ryle's concept of motives and emotions, DeCharms (1968, p. 60) mentions that

much of the so-called intrinsically motivated behavior which people have does not appear to be "driven" or even specifically "directed" by affective states. Examples crop-up most often in "free" situations of play or creative activity.

Such a position in relation to the importance of play definitely and positively facilitates the interrelation of this portion of DeCharms' theory with Rogers' Ability to Toy with Elements and Concepts (3) which necessitates, according to Rogers (1961, p. 355), the ability to play spontaneously with ideas, colors, shapes, relationships - to juggle elements into impossible juxtapositions, to shape wild hypotheses, to make the given problematic, to express the ridiculous, to translate from one form to another, to transform into improbable equivalents. It is this spontaneous toying and exploration, continues Rogers, that produces the hunch, the creative seeing of life in a new and significant way. It is as though out of the wasteful spawning of thousands of possibilities there emerges one or two evolutionary forms with the qualities which give them more permanent value.

In addition to the foregoing, Liebermann (1965) found in a study with kindergarten children, that three measures of divergent thinking (ideational fluency, spontaneous flexibility, and originality) were significantly associated with measures of physical, social, and cognitive spontaneity, as well as with indexes of joy and humor. On a centroid factor analysis, the spontaneity, humor, and joy variables also comprised a primary factor which Liebermann labeled "playfulness". Subsequently, she proposed the existence of a playfulness dimension in early life which, according to her, is a precursor of adult creativity (Liebermann, 1967).

However, Liebermann employed a Torrencian paradigm in her investigations, which does not negate her findings but it does make it more difficult to relate her findings to this thesis. '

Recently, though, Singer and Rummo (1973) retested Liebermann's hypotheses using a Wallach and Kogan-type measure of ideational creativity and a factor analysis confirmed Liebermann's finding of a general playfulness dimension in creative children.

Next, it would seem that a relationship exists between DeCharms' finding (1965, p. 255) that an individual feels freer when working for an attractive agent than when working for an unattractive one and Rogers' condition of acceptance of the individual as a possessor of Unconditional Worth (i). A child will work harder and get more out of what he is doing if his endeavors hold some attraction for him, either because of the activity itself or the agent initiating the activity. A study by Hastorf, Kite, Gross and Wolfe (1965) is related to this concept of a positive orientation (Origin-like) toward another individual. The authors concluded that behavior which was perceived as externally caused was not weighted as heavily in evaluation as behavior seen as internally caused. Further, it was found that when individuals "read" the locus of causality for a change in another's behavior, the nature of this reading influenced the inferences made about that person. Unless one can attribute change to an internal cause, one is not likely to alter his impression of another. This finding has many implications for education, especially as it applies to the natural curiosity and existence of an intrinsic desire for assimilation in children mentioned earlier.

Kuperman (cited in DeCharms, 1968, pp. 343-347) found that

Origin cognition is greater and Pawn lesser in low-constraint conditions rather than in high constraint conditions. Thus, if one is to be consistent, in order to foster an Origin behavior, one must provide a climate free of External, Competitive Evaluation (ii). And finally, Empathy (iii) is a concomitant of Originness in that empathic environments seem to foster Originness in interpersonal interactions and in that empathy plays a large role in DeCharms' construct of personal knowledge, which is necessary if the concept of personal causation is to develop in an individual.

My reasons for the prior theoretical and empirical linking of Rogers' view of creativity with DeCharms' O-P variable center around the fact that if they are as close as they appear to each other in terms of tapping into common variables, then the measure of one could be employed to measure what the other measures and vice versa. However, to understand, more exactly, what I am pursuing, the reader should keep in mind that to say that individuals are either absolute Origins or absolute Pawns in the dichotomous sense of the word is to imply a meaning and a distinction not intended by DeCharms. Plimpton (1968, p. 6) mentions that this would be rather unrealistic. Rather, in discussing Origin and Pawn, one must assert that these two concepts should be conceived as lying along a continuum, and in talking about everyday life, one has to recognize that an individual cannot be an Origin 100% of the time for the simple reason that man lives in a complex social context and as such he is oftentimes subject to external forces "causing" him to act and to behave in certain normative ways. However, to say that an individual is an Origin or to allow an individual to function as an Origin means that he is acting or



can act more often as though he is causing his own behavior rather than something external causing his behavior.

Thus, with respect to the education of children, viewing and treating a child as an Origin instead of a Pawn necessitates that one assume a nonauthoritarian approach (an Origin approach) to interpersonal relations, and recognize the intrinsic value the child places in himself, in his world as he perceives and understands it. And on a two dimensional continuum, the Origin-like approach would be very similar to Lewin, Lippitt, and White's (cited in Sampson, 1971, pp. 238-247) experimentally created democratic group and the Pawn-like approach would be very similar to that taken in their experimentally created authoritarian group. I would expect that the results of this study would parallel those of Lewin, Lippitt, and White and in fact Jackson (personal communication) has found that a child's O-P score varies as a function of the type of setting he is involved in. Specifically, children from laissez-faire families scored lowest on the O-P measure, children from the authoritarian families scored next lowest, and children from democratic families scored highest on the O-P variable.

In addition to this, authoritarian leaders, according to Jackson and Sanders

"place the locus of control in themselves and tell the child that he is not capable of taking responsibility. Just the opposite is true of the laissez-faire leaders who allow the child to take responsibility for himself." The democratic leaders also "trust the child to take some responsibility for him (the leader). Obviously the democratic leadership pattern is more likely to encourage autonomy than the other two." (1973, p. 251)

These two authors further assert that messages or communication which comes from leaders (teachers) have import at levels other than what is

overtly demonstrated. The import is probably very influential and has a drastic impact on the child's autonomy. The amount of warmth or concern expressed to the child affects his autonomy as well.\*

Hence on a control vs. interaction continuum what is found is that the former fosters the development or appearance of Pawn-like behavior if not a Pawnish personality, while the latter abets Origin behavior if not the establishment of an Origin personality by the reduction of control or, analogously, by the "dropping of the reins" (DeCharms, 1969, pp. 9-10). This finding is prevalent not only in research completed with groups and classrooms but it is also demonstrated in the literature on child rearing.\*\* However, here it is important to remember that interaction with a child via an Origin-like approach implies a philosophy of education different from the one now currently in vogue; for in many schools and classrooms children are taught to consider only the "yes" answer as the right answer. They are looked upon as little adults directed into vying for grades on competitive exams because they are told that these are the only measures of progress and success. Denied necessary and valuable symbolic freedom by the rigors of the class schedule, it is no wonder that so many children fail in school (Holt, 1964).

The indicator of classroom climate used in this study was the Indirect-Direct (I-D) ratio measured by the Amidon and Flanders Interaction Analysis (1963). The original reasons for the use of this instrument centered on Amidon and Flanders discussion (1963, pp. 58-60) of Indirect and direct classroom climates. What they found was that the teachers

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\* See Rosen and D'Andrade (1959), Winterbottom (1969) and Jackson (in preparation) for an indirect support of this assumption.

\*\* See Parke (1969) for a review of articles concerning child rearing and related topics.

of students who learned less too often employed a pattern of direct influence in the classroom, while higher achievement and less dependence was found when goals were clarified by an indirect approach.

Also it was found that a more indirect approach stimulates verbal participation by students, which provides the teacher with the students' perceptions of the situation, regardless of whether these perceptions are correct or incorrect. Such an approach not only provides the teacher with more information, but it often results in the students developing more responsibility (an inner locus of causation) for diagnosing their difficulties and suggesting a plan of action.

On the other hand and antithetically, a more direct approach increases student compliance (external locus of causality) to teacher opinion and direction. It conditions students to seek the teacher's help and to check with the teacher more often to be sure they are on the right track. A further finding of Amidon and Flanders was that direct teachers or teachers who fostered direct environments in their classrooms did not use the social skills of communication that are involved in accepting, clarifying and making use of the ideas and feeling of students, whereas the indirect teachers did. Teachers using these social skills appropriately have less need for giving directions and criticism.

Taken together, the results of this research, according to Amidon and Flanders, seem to indicate that higher standards can be achieved not by telling students what to do in some sort of "get tough" policy, but by asking questions and then using student ideas, perceptions, and reactions to build toward greater self-direction, student responsibility and understanding. Such a policy necessitates a genre of teacher that demon-

strates a variability of patterns of behavior in the classroom, which is exactly what Amidon and Flanders found the better teachers had, while the poorer teachers showed patterns that were much alike. This suggests, concludes the authors, that creative teaching is a unique expression of a particular teacher's personality using her range of ability and skill in working with a particular group of students in a particular subject matter field (1963, p. 60).

In discussing the natural ability of children to know what they want and to consider those things as that which they most want to learn Holt (1964, 1967), Button (1969), and Silberman (1970) assert that the preferences of children lie close to their actual needs. Each new thing they learn makes them aware of other new things to be learned. The curiosity of children grows by what it feeds on!

This is the existentialism of the child - the condition of real-ness and fulness of functioning, of expanding sensitivity and awareness, of absorbed involvement in issues and work and people, of joy and of love - based upon the awareness a child has of himself as a living, choosing, self-determining, unique individual. In recognizing the "authentic child" the above authors as well as Drews (1968a, 1968b), Goodale (1970), Hallman (1967; c.f. also: Appendix 1 for a summary of factors involved in teaching creatively), Piaget (1970), Rogers (1961), and Starkweather (1965) are admitting and encouraging those conditions which facilitate creativity or assimilation. The results of such facilitations in relation to personality, intellectual and creative development of the child are readily demonstrable from studies conducted by Drews (1968b), Hutchinson (1970), McCormack (1970), Mitchell (1968), Rogers (1961), Rusch,

Denny and Ives (1965), Singer and Rummo (1973), Starkweather (1971), Stoffer (1970), and Wallach and Kogan (1965).

This is neither the place nor the time to describe or summarize each one of these studies and their area of research, however, I will, very briefly, mention some of them over the next few pages.

The Goleta Creativity Project (Mitchell, 1968) was designed and intended to have teachers explore ways of increasing the creative thinking abilities of the elementary school youngsters they taught. This end was achieved by giving those teachers involved time off from their regular teaching assignments which allowed them to visit each other in small groups or individually and to discuss teachers' instructional activities in terms of aims, methods, and content. Various psychological aspects of creativity were explored during the project and an emphasis was placed on developing problem-solving skills and divergent thinking, on communication, on sensitivity to others (particularly children), and on self-evaluation.

Two teachers, at the end of the program, made the following evaluations and comments:

"As far as teaching goes, the creativity project helped me to become more aware of children and their thoughts, feelings, attitudes, etc."

"The big change in my attitude has occurred in my feelings toward the role of the teacher in relation to the students. I feel that rather than utilizing the role of authority bent on teaching only the stated areas of the curriculum, I now try to cover a wider area and encourage the children to express all their ideas as well as seek the right answer."

The implementation of a philosophy such as that discovered in Goleta is readily observable in one study by Rusch, Denny and Ives (1965)

and in another by Hutchinson (1970). In the former, four groups of sixth grade children were employed, two experimental and two control groups. Teachers fostered creativity in the experimental groups by frequently referring to the pupils' success and they also employed failure as a positive learning device. Divergent thinking was encouraged by these teachers and they were concerned with creating a climate of mutual respect and acceptance. The teachers of the control group employed no such creative implementators. The Ss of this study were pre-tested on a creativity measure in September and post-tested in June at the end of the school year; it was concluded by the researchers that creativity was fostered in the experimental group and they based this finding on the fact that this group improved, statistically, on 5 of the 7 creativity variables measured by the creativity test, whereas the control group did not differ in any of these indexes.

The second study by Hutchinson used seventh graders as the subjects. They were divided into the control group which had teachers who "used current teaching methods" and an experimental group which, along with their teacher, received four days of group instruction in the experimental procedures and techniques of ideational fluency, originality, and planning elaboration - methods to influence and expand creativity. Students in the experimental group were informed that they were going to be treated as "thinkers". Only four teachers were a part of this project, all four first taught the control group for a period of three weeks, then they taught the experimental group for the same length of time.

Hutchinson concluded that the mode of instructional methods

produced a distinct change in the ratios of verbal response categories which were the measure of creativity which he employed. The experimental group had significant gains over the control group on four of the ten measures of creativity with one other measure approaching significance.

In both of these studies, the "creative" teachers helped to facilitate environments which could be described as "indirect" or non-authoritarian, while the control teachers produced an environment which could be considered as "direct" or authoritarian. But as previously noted, all subjects involved with these studies were from the sixth or seventh grades. This experimenter could not find any studies dealing with an existential approach to the subject of creativity and its relationship to classroom environment which used younger subjects. Although Starkweather (1965, 1971) has investigated creativity with preschool children following a philosophy similar to that of Wallach and Kogan, and Ward, her research has not been done in relation to classroom environment. A study completed by Singer and Rummo (1973) which was mentioned earlier studied ideational creativity in kindergarten-age children, but they too did not use different genres of classroom environment as a dependent variable. The three classrooms involved in their study were "all non-authoritarian in their approach, favoring cooperation as a value over competition and all classrooms had an air of acceptance of childrens' needs and feelings permeating both official policy and teacher-student relations" (Singer and Rummo, 1973, p. 155).

Also only two studies which utilized the approach of Torrance with elementary school children younger than sixth graders were found (Cartledge and Krauser, 1963; Liebermann, 1965).

In addition to the foregoing, Ward's (1968) tests of creativity, which were based on the work of Wallach and Kogan, have not, as yet, been employed in a longitudinal study of creativity. And since conceptually, it seems that Rogers' theory and that of DeCharms are very similar in terms of their mutual emphasis on the importance of creativity, possibly Plimpton's (1968) O-P measure could be utilized as an index of creativity; I say possibly because it has not been used with children younger than those who are in the fifth grade (Plimpton, 1968; DeCharms, 1972), nor has it been directly linked to creativity as yet.

It would be good to mention here that DeCharms, as well as others, has done research investigating the relationships existing between classroom environment and Originness. Jackson and Sanders (1973, p. 254) mention that Alschuler (1968), Rogers (1969), and DeCharms and Koenigs (1973, in press) suggest that a democratic classroom climate, and open classroom structure, and experience-based learning facilitate motivation. These process-level aspects of classroom operation actualize democratic/allowing influence strategy and constitute indirect forms of autonomy-training. Employing this philosophy and also employing personal causation training of 6th and 7th grade teachers and having them, in turn, train their pupils resulted in a longitudinal study supervised by DeCharms (1972) for three years and demonstrated

"that personal causation training had positive effects on the motivated behavior of both teachers and children in the schools. Further, at least some of the increase in academic achievement of the students was directly related to change on the Origin variable induced by the training. Practical effects were achieved and they seem to be related to the theoretical analysis of the Origin concept.

(This) research ... produced evidence that the



central concept - embodied in the Origin variable - was, in fact, an important mediator of change."  
(DeCharms, 1972, p. 112)

Because of the absence of research in these specific areas, this study will consider the following hypotheses within an existential framework and their relevancy to first graders who, when they enter the first grade, are beginning, for the first time, a formal process which has very definite influences on their lives:

1) An average increase in creativity will be higher for children in indirect or non-authoritarian climates than for children in direct or authoritarian climates.

2) An average increase in Originness will be higher for children in indirect or non-authoritarian climates than for children in direct or authoritarian climates.

3) Change scores on the O-P and Creativity Measures will be positively associated.

## Method

### Materials

The indicator of classroom climate developed by Amidon and Flanders (1963), which measures the indirect-direct continuum, was employed to measure and to determine the atmosphere prevalent in the classrooms involved in this study.

The Interaction Analysis, as it is called by Amidon and Flanders, is composed of 10 categories which are divided into three major categories: teacher talk, student talk, and silence or confusion. Teacher talk is further subdivided into indirect influence and direct influence.

Indirect influence contains four categories: (1) acceptance of feeling, (2) praise or encouragement, (3) acceptance or use of ideas of students, and (4) asking of questions. Direct influence contains: (5) lecturing, (6) giving directions, and (7) criticizing or justification of authority. Student talk is composed of: (8) student talk-responses and (9) student initiated talk. Silence or confusion (10) is a lone category that is scored during times of silence or confusion in the classroom.

The interaction analysis is constructed by the observer writing down the category number of the interaction he has just observed in the classroom in sequence in a column. The observer notes approximately 20 interactions per minute or one every three seconds. These numbers are then transferred to a matrix and the particular analysis completed from the given interactions noted.

In this study, this experimenter was interested in the Indirect-Direct Ratio and as such he was mainly interested in teacher talk. The I-D ratio then, stems from dividing the total number of indirect interactions (categories 1 - 4) by the direct interactions (categories 5 - 7). Hence, an I-D ratio of 1.0 means that for every indirect statement given by the teacher she also gave one direct one; an I-D ratio of 2.0 means that for every two indirect statements, there was only one direct statement, etc.

In conjunction with the I-D ratio, the revised I-D ratio is computed in order to find out the kind of emphasis given to motivation and control in the classrooms studied. The number of tallies for categories 1 - 3 is divided by the number of tallies for categories 6 & 7.

Categories 1, 2, 3, 6, and 7 are more concerned with the actual presentation of subject matter. This ratio eliminates the effects of Categories 4 and 5 (asking questions and lecturing), and gives evidence about whether the teacher is direct or indirect in her approach to motivation and control - an important point especially as it related directly to DeCharms' contentions, mentioned earlier, that the teacher has to provide and foster indirect motivation and control in the classroom. As with the I-D ratio, a Revised I-D ratio of 2.0 means that for every direct statement given by the teacher in relation to motivation and control, she also gives two indirect statements, etc. (For a more detailed explanation of Interaction Analysis see Amidon and Flanders, 1963.)

The measure of creativity employed in this study consists of two forms (Form A and Form B), each of which have three parts (Uses, Abstract Patterns\*, and Instances) Form A and B Uses and Abstract Patterns were prepared by Ward (RB-71-40) using items from Wallach and Kogan (1965) and from Ward (1968). The Uses game involved asking subjects uses for common objects - (Form A) newspaper, chair, brick, string, (Form B) shoe, knife, button, coathanger. The Abstract Patterns game was designed to elicit possible interpretations for four simple abstract patterns.

According to Ward (RB-71-40, p. 4) these two forms were comparable. However, as far as this experimenter knows, Ward did not develop two comparable Instances games. In two studies Ward (1969a, 1969b) did use the Instances game but in the former it consisted of naming instances of round things, soft things, and red things. In the latter study the Instances game asked the subject to name all the instances of round things, things with wheels, and red things. Since Ward employed three cue instances with each Instance game, this experimenter decided to use two

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\* See Figure 1 for drawings of the Abstract Patterns

of Ward's Instances cues with each form of the Creativity Measure and then he borrowed two other cues from Wallach and Kogan (1965) which generated the same number of average total and unique responses, based upon a pilot study (Wood, 1971), as those cues mentioned by Ward. After the additions, Instances contained: (Form A) things that make noise, round things, and soft things, (Form B) square things, things which have wheels, and red things.

A similar, singular form of the above creativity measure has been successfully employed in measuring creativity in children as young as four years of age (Ward, 1969a).

Two creativity scores were obtained for each child from each test during both the pre and post-testing: fluency (total number of ideas given, excluding repetitious responses and responses judged inappropriate) and uniqueness (the number of acceptable responses given by only one child in the sample).

Even though the O-P measure (Plimpton, 1968) is standardized for use with non-pictorial cues and older children, this experimenter believed that if pictorial cues were employed, meaningful protocols could be obtained from the first grade subjects. Because TAT cards deal with identification or self-expression (Plimpton, 1968, p. 23), which is what the written non-pictorial cued protocols with older subjects seek, it was decided to employ TAT cards to provide the necessary pictorial stimuli for the measure. All together, eight TAT cards were utilized: 1, 5, 8DM, 9BM, 13B, 7GF, 8GF, and 18GF.

### Subjects

During the first phase of this study which was conducted in the Spring of 1972, twelve first grade teachers and the children in their

classrooms formed the population; during the second phase which was conducted during the 1972-1973 school year, six of the original twelve teachers were retained in the study and ten children from each one of their classrooms formed the population. The twelve classrooms originally involved and the six that participated in the second phase of this study were all from schools located in West Omaha.

### Procedure

In the Spring of 1972, this experimenter visited the twelve first grade classrooms chosen and assessed the climate according to the procedures described earlier; however, rather than noting the interactions in the class as they were going on, three class sessions for each of the twelve classrooms, each approximately 20 minutes in length, were recorded on tape for later scoring. From these twelve classrooms, six were chosen, three from each end of the indirect-direct continuum, to be involved in the second phase of this study during the following school year.

The indirect group of teachers were represented by those individuals who have the highest I-D ratio, designated as Classrooms 1, 2, and 3. The direct group of teachers were represented by those individuals who had the lowest I-D ratio and they were designated Classrooms 4, 5, and 6.


During the Summer, subjects were chosen from the class lists of those first grades they would be entering in the Fall. Prior to the beginning of the school year, all sixty children were given the games of creativity individually and in an evaluation-free testing context. Fifteen boys and fifteen girls received the A form of the creativity measure, and fifteen boys and fifteen girls received the B form of the creativity measure on the pre-test. This division of test administration was as

evenly distributed among the six classrooms as possible. The children were praised for their responses throughout the task and they continued offering ideas until they indicated that they had no more to give. In all instances, the tests were given in the school libraries which provided a testing environment and testing conditions which were generally identical from school to school. More detailed procedural instructions may be found in Ward (1968; 1969a).

The TAT measure was administered to thirty children, five from each class; each child was shown five cards. If the subject was a boy, he was shown 13B, 9BM, 1, 5, and 8BM; if the subject was a girl, she was shown 7GF, 18GF, 1, 5, and 8GF. Over the thirty subjects, the order of presentation was never changed. After showing the child the picture, the following five questions were asked and a specific amount of time was allowed for a response: Would you tell me a story about this picture? (2 minutes); Tell me again, what is happening, who are the people (who is this boy)? (1 minute); Tell me again, what has led up to this situation, what has just happened? (1 minute); Tell me again, what are these people (what is this boy) thinking and what do they (does he) want? (1 minute); Tell me again, what will happen, what will be done? (1 minute).

Children taking both the creativity measure and the O-P measure did so in two sessions; during the first one, the former measure was administered, while during the second session (several days later), the latter measure was administered.

In May of 1973, a post Interaction Analysis was made of the classrooms involved in this study. At the same time, the creativity measure and the Origin measure were readministered. Those children who



had taken the A form of the creativity measure on the pre-test were administered the B form during the post-testing, while those children who had taken the B form on the pre-test; were administered the A form on the post-test. The testing conditions during the post-test were as identical as possible to those existing during the pre-test and as described above.

### Results

Table 1 presents the results of the Amidon and Flanders Interaction Analysis. Although 12 teachers were originally involved in this study, only ten are listed in this table, since one of the original 12

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Insert Table 1 about here

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teachers left teaching during the course of the study and the tapes from the first interaction period of another teacher were unscorable because of the constant "confusion" in her room - both the teacher and her aide were simultaneously talking much of the time which made an accurate notation and classification of statements impossible.

Classrooms 1-3 are the classrooms designated as indirect classrooms and classrooms 4-6 are designated as direct classrooms. The magnitude of the I-D ratio served as the criterion for this arrangement. Classrooms A-D, as can be seen, had median I-D ratio scores. The Revised I-D ratio scores are included because, as was mentioned in the Introduction and Materials sections, of their relationship to Originness as an indication of the amount of motivation created and control fostered in the respective classrooms by the particular teachers.

The two teachers in the indirect group marked N/A did not want a post-measure made of their classrooms.

Table 2 is a master table in the sense that it presents all the raw data accumulated during this study related to the creativity measure. The table is broken down by classroom, by type of classroom, by sex, and by order of presentation of the two forms (A and B) of the creativity measure. Only 54 children were involved in the complete study and the analysis of the data accumulated from them is presented in the subsequent tables. 5 of the original 60 subjects were lost because their families moved out of the school district and one changed classrooms during the school year.

In scoring the creativity measures, this experimenter, unlike Ward (1968) who found an average of 3.9 bizarre or repetitious responses with each subject in his study, did not judge any response given by a child as bizarre and in only nine instances were repetitious responses deleted from this study. However, during the course of the pre-testing eleven children indicated to this experimenter that they did not understand a particular question by the genre of responses which they gave, for example:

with Instances on Form A, one child gave "spinning around" and "windmills" as responses to "Name all of the round things that you can think of," and one other child mentioned merry-go-rounds to the same cue. Both of these children were confusing round things with things that went or had things which went around. Also with Instances on Form A, several children gave "glass windows", "glass covered tables", "hardwood floors", etc., as responses to "Name all of the soft things that you can think of."



Clearly, the children here were confusing soft things and smooth things. This confusion was still evident in five of the children during the post-testing with the same two examples just listed. The deletion of these responses from the childrens' Total and Unique scores did not change the scores significantly.

The results of a 2 X 2 X 2 (Type of classroom X Order of presentation X Sex) analysis of variance of the Total response change scores on the Creativity Measure form the content of Table 3. This analysis was computed in order to test the validity of one half of the first hypothesis

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Insert Table 3 about here

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(in that the Total scores represent one half of the Creativity Measure) regarding the type of classroom environment and its relationship to creativity. The possibility of influences other than classroom climate were also tested by this analysis, but significance was obtained only on the type of classroom main effect (.025 level). The two remaining main effects (Order of presentation and Sex) and all four interactions were not significant at the .05 level.

Table 4 is likewise a listing of the results of a similar 2 X 2 X 2 analysis of variance of the change scores for the Unique responses on the Creativity Measure. The reasons for this analysis are similar to those justifying the analysis presented in the previous table with the one difference being that the Unique scores represent the second half of the creativity measure and as such, the second half of the first

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Insert Table 4 about here

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hypothesis. None of the main effects or interactions in this analysis were significant at the .05 level, although the type of classroom variable approaches significance ( $.10 > p > .05$ ).

The information composing Table 2 is condensed in Table 5 in order to further demonstrate that the average child in the indirect classrooms increased his Total/Unique score on the creativity measure more than did the average child in the direct classrooms: 55.56/28.59 vs. 26.19/13.64. Also it should be noted that the average child in Room 4 (a classroom classified as direct) increased his Total/Unique score on a level comparable with those produced in Rooms 1-3, in fact the average Total/Unique score for Room 4 (57.44/30.89) is above the average score of the combined indirect rooms.

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Insert Table 5 about here

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To explain further the nature of the significance of Total responses and the lack of significance of Unique responses found between the two types of classrooms, Figure 2 is employed to graph the average pre- and post-Total and Unique scores on the creativity measure for combined indirect and combined direct classrooms ignoring sex and order of presentation. As can be seen from this figure, initial responding on the pre-test for

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Insert Figure 2 about here

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both Total number of responses and for Unique responses are very close: 105/32 for the indirect classrooms vs. 110/34 for the direct classrooms; but they clearly diverge on the post-measure: 160/61 for the indirect

classroom vs. 137/46 for the direct classroom.

Data concerning the 28 subjects who were administered the creativity measure and the Origin measure is arranged in Table 6. Originally, 30 subjects were involved with this portion of the study, but 2 were lost because their families moved out of the school district. Pre-

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Insert Table 6 about here

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and post-test scores are presented by sex of the subject and by type of classroom for the creativity measure and for the Origin measure; however, this table is not subdivided by order of presentation of the two forms of the creativity measure because this would have rendered the individual cells too small for meaningful analysis.

Table 7 shows the results of a 2 X 2 (type of classroom X sex) analysis of variance of the Origin change scores. This analysis was undertaken in order to determine the validity of the second hypothesis which

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Insert Table 7 about here

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concerned the relationship of classroom environment and the Origin scores of those children involved in this portion of the study. The two main effects and their interaction were not significant at the .05 level.

Table 8 condenses the data which appears in Table 6 by first listing average change score per subject per class ( starting with room 1 and ending with room 6: 3.2, 1.5, 3.5, 4.4, 3.0, 3.2 ) and then by listing

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Insert Table 8 about here

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average change scores per subject for the indirect vs. direct classrooms (2.73 vs. 3.53). What is noted is that the average change scores are small and that the average change score difference existing between the indirect and direct classrooms is .80, which was already noted as being nonsignificant at the .05 level.

In viewing Tables 1, 6, 7, and 8 together the suggested influence, mentioned earlier, of the Revised I-D ratio on the Origin scores does not seem to be particularly valid with the children in this study in that there were no significant main or significant interaction effects which affected the Origin scores. Also in comparing Table 1 and Table 5, it appears impossible to relate the Revised I-D ratio with average change scores on the creativity measure in a sensible and meaningful fashion.

To test the relationship between the creativity change scores and the Origin change scores (Hypothesis 3), two Pearson Product-Moment correlations were computed. The first was between the total change scores on the creativity measure and the change scores on the Origin measure for each child and the second was between the Unique change scores on the creativity measure and the Origin change scores. The former computation resulted in a correlation of .0072, while the latter produced a correlation of .0113.

## Discussion

### Hypothesis 1

As hypothesized, the data demonstrates that children in this study and in the indirect classrooms did increase their Total score significantly more than did those children in the direct classrooms. However, the difference between the two groups on the Unique measure was not quite significant which leads to the conclusion that the first hypothesis was only

partially substantiated. Some reasons for this finding can be found in Table 1 and Table 5. In the former Table, the teacher in classroom 4 had an I-D ratio on the post-test that would have placed her closer to the Indirect group than to the Direct group. Apparently she was doing something "different" with her class during the post-interaction analysis, and presumably she was doing something "different" with her class during the school year, that she was not doing with her class during the pre-interaction analysis.

In Table 5, the validity of this conclusion seems undeniable. As was mentioned in the Results section of this study, the children in classroom 4 scored, on the average, above the Total/Unique average for the combined average of the Indirect classroom group. Unfortunately, this finding was not discovered until after the end of the school year so a more detailed analysis of this finding is beyond the scope of this study. However, if classroom 4 is placed within the Indirect group and a 2 X 2 X 2 analysis of variance, similar to the one described for Table 3, is computed, the validity of the first hypothesis, regarding the benefits of an Indirect classroom environment on creativity is completely supported with Total responses significant at less than the .001 level and Unique responses significant at less than the .05 level.

#### Hypotheses 2 and 3

The second and third hypotheses, which concerned (2) a higher increase in Origin scores for those children in Indirect classrooms and (3) a positive association between creativity and origin change scores, were not supported. In this experimenters opinion, age rather than other S characteristics or faulty reasoning in the introduction section of this

appears to be responsible for the failure to find a relationship between creativity and Originness. It is possible that a unitary Origin dimension cannot be found in children this young.

Children have to be taught to be responsible Origins (DeCharms, 1969, p. 10) and it may be that the children of this age were not yet cognitively able to understand the distinction between internal and external control of behavior. This would be in line with the research on training studies presented in Sigel and Hooper's book (1968) concerning fostering conservation in children on Piagetian-type tasks where only those children at transition stages were responsive to the training. The transition stage research conducted by Turiel (1969), who found that an individual's level of moral development could be increased through training only if he was at a transition stage between two stages, indicates a similar effect of cognitive readiness on training. Possibly the children in this study were not as yet at the transition stage between knowing and not knowing that "physical causation develops out of personal causation" (DeCharms, 1970, p. 261), and hence the actualization of Originness could not be fostered no matter what the training conditions.

Prior to his statement concerning physical and personal causation quoted above, DeCharms mentions that a similar conceptual relationship is implicit in Piaget's discussion of the origin of the child's conception of causation and DeCharms (1970, p. 260) cites Piaget's argument as presented in Flavell (1963):

Just as with the other special developments, an understanding of the development of causality is furthered by first having some general notion as to where the infant begins and what he is developing towards. As to the former, Piaget finds it useful to define two kinds of precausality - like assimilation and accommodation, logically distinguishable but virtually indissociable in early cognitive functioning . . . The first, efficacy (referred to as dynamism),

refers to a dim sense that the inchoate feeling of effort, longing, etc., which saturate one's actions are somehow responsible for external happenings. Efficacy is therefore a causality of action-at-a-distance (since presence or absence of spatial connection between self as cause and event as effect is irrelevant to it) in which the cause is vaguely sensed as inhering in one's action without, however, the subject being sufficiently advanced to see self and actions as a separate causal agent in the universe. The second, phenomenalism, refers to the feeling that temporal (but not necessarily spatial) contiguity between any two events means that one caused the other. It leads to a kind of causal anarchy in which, as Piaget puts it, "n'importe quoi produit n'importe quoi" (1925, p. 33).

Piaget's hypothesis is that the early stages of sensory-motor development are characterized by a causality best described as an undifferentiated mixture of efficacy and phenomenalism. As a knowledge of the evolution of space and objects would predict, this early causality knows nothing at all of objects as causal centers acting upon each other through spatial contact. With development, on the other hand, causality becomes both spatialized and objectified, and efficacy and phenomenalism, originally undifferentiated, break apart to undergo separate fates. . . . Efficacy eventually becomes psychological causality, by which Piaget means the sense - now in a self aware of its thoughts and wishes - of causing one's own actions through volition, of willing to perform such and such action before performing it. And phenomenalism becomes physical causality, the causal action one object exercises on another through spatial contact (Flavell, 1963, p. 142).

Sigel (1964, pp. 232-236) also, in discussing Piaget's concept of the development of Causality, states that although children as early as the Sensory-Motor period show awareness of cause-effect relationships, an objective understanding of the causal nature of events does not blossom until late childhood. The explanations given by children prior to achievement of objective causality have been called precausal because they are infused with subjective thinking and based on limited knowledge.

The series of experiments Piaget designed to discover the developmental changes in the child's concepts of psychic and physical phenomena are reviewed elsewhere (Flavell, 1963; Sigel, 1964) but what they

demonstrate is that young children have three basic orientations to reality (realism, animism and artificialism), each of which is said to derive from egocentrism (the initial lack of differentiation between the self and the world). Each of these orientations proceeds toward objective reality and causality through a succession of stages, and although the stages for each one are interrelated, they are not perfectly synchronized.

Even though Piaget's (1930) finding on reality and causality can be compacted into three stages, here this experimenter is concerned only with the second stage, which lasts from two or three to seven or eight and is characterized by the child's egocentricity. During this stage, the child has no desire to find logical justification for his statements of belief. The child is precausal and causal concepts according to Sigel (1964, p. 234) are based on a confusion between psychological activity and physical mechanism, and between motive and cause.

Laurendeau and Pinard (1962; cited by Sigel, 1964, p. 235) investigated causal thinking by reviewing studies done by other researchers and by undertaking their own program of research. They summarized their results as follows: Realism disappears at approximately six and a half years of age, artificialism around nine, animism and dynamism around ten. Before these ages, precausal thinking is preponderant," after these ages the opposite is true and possibly this is one reason why Plimpton (1968) and DeCharms (1972) successfully identified and measured the Origin Syndrome in fifth graders.

Hence, precausal explanations decline with age but disappear at different rates, depending on the particular types of causal problems.



Laurendeau and Pinard's findings show time lags, since, according to Laurendeau and Pinard, "some areas of reality are more easily or rapidly objectified than others, according to the complexity of the phenomena, the child's experience, and the formal teaching he has received."

Another finding of the Laurendeau and Pinard study is that although experience and knowledge may influence the onset of causal thinking stages and the lag in certain areas, the stage progression of causal thinking is fixed. In terms of dynamic or efficacious explanations and phenomenalist explanations, the former are not frequent at any age but are found occasionally among children of ages eight to sixteen, while the frequency of the latter is most prevalent at the age of eight and declines steadily up to age fifteen (Sigel, 1964, p. 235). These considerations may constitute another explanation why Plimpton (1968) and DeCharms (1972) were successfully able to identify and measure the Origin Syndrome in fifth graders, whereas the results of the present study were not clear.

From the above information and from research not mentioned here, one can conclude that children do provide different kinds of explanations for physical and psychical phenomena, that there is a crude correspondence with age but not a one-to-one relationship, and that the existence of stages of causal explanations is still a tenable hypothesis.

However, this does not obviate the fact that the child

"must learn not to make what we call 'magical' attributions to things as if they were people. Human beings, and probably animals too, know without learning about their own simple motives or reasons for acting, and they soon learn to act in a way to satisfy these motives, and along the way, they learn things are caused because they cause them. If a child does not learn to cause things to happen he cannot live." (DeCharms, 1968, p. 9)

Nor does it disprove the hypothesis that possibly Originness does not make its testable appearance until the child has decreased his involvement with realism, animism, and artificialism as precausal explanations and increases his reliance on psychological causality and psychical causality.

Another factor that may have contributed to the lack of validation of the second and third hypotheses of this study may reside in the stimulus materials employed as cues for the Origin protocols. As mentioned in the Materials Section, TAT cards, prior to this study, have not been used as they were here. This may have been one reason explaining why many of the children in the study mentioned to this experimenter that the drawings were old, that they appeared to be showing scenes from olden days, and that it was hard to tell what many of the drawings were actually representing. Of the eight TAT cards involved, only 13B escaped these comments, possibly because it appears to be of a photographic quality rather than a line drawing. With many if not the majority of the children, the TAT cards seemed difficult to relate to and their Origin scores may have suffered because of this.

In connection with the representation of objects, which is what is obtained from stories based on TAT cards, Johnson (1972, p. 93), for instance, has pointed out that the use of more lifelike objects in concept experiments improves performance. When line drawings representing trees and other familiar objects, for example, varying in form and color, were presented to children for matching to a sample, 95 out of 120 preferred to match on the basis of meaningful representation (Bearison and Sigel, 1968). The children in the Bearison and Sigel study were between

seven and eleven at which age meaning dominates form and color. Also, earlier research by Sigel (1953) mentioned by Johnson (1972, p. 93), indicated that middle class boys of this age would categorize meaning whether they were categorizing objects, pictures, or words. The children involved in the present study on creativity were all from middle class families.

Even though the just cited research pertains to categorization in particular and to children one year older than those children involved in this study, I believe that the dominance of meaning unearthed in these experiments is directly transferable to the manner in which objects or scenes are represented in general, and here, what medium is employed to elicit Origin protocols in particular. If this is the case, this experimenter recommends that future research on Originness with younger children be carried out with pictures which match the verbal cues for the short story protocols designed by Plimpton (1968).

One last difficulty incurred during the course of this research necessitates some comment, the use of the Amidon and Flanders measure of Classroom Interaction. Both during the pre and post measurements of the classrooms involved all teachers mentioned to this experimenter that they were having difficulty in organizing a class on different subjects for a 10 to 20 minute time period during which the whole class would be involved. Many of the teachers usually had such a class for the purpose of this study only during the pre and post taping times. One reason for this is that both the pre and post taping sessions were conducted during the Spring and in reports from the various teachers in this study, the children, at this time, worked quite independently and the first 10 or 15 minutes each morning was used to pass out assignments and to organize activities for the day. After this, the predominant mode of interaction

the teacher had with the children, exclusive of reading groups, was a one- or two-to-one relationship.

I feel that the Amidon and Flanders Measure was reliable and that it did distinguish between the Indirect and Direct teachers but an instrument should be designed to assess atmosphere in classrooms where the teacher does not carry on prolonged one-to-many interactions with her entire class. Possibly, a review and integration of the measures developed by Amidon and Flanders (1963), Denny (1968), Harvey et. al. (1966), and Schalock et. al. (1964) would provide such an instrument.

#### Implications for Education

The research reported here has many implications for education, not only in relation to the finding that the teachers in the Indirect group and one in the Direct group were doing something with their classes that the two remaining teachers in the Direct group were not doing but also the foregoing research has a lot to say about the validity of developmental models and the fact that growth is a continually unfolding, additive process. Everything does not appear all at once, although this may seem to be the reality of aging as perceived by many adults.

One phase of this development is evident in Table 6. Apparently, Piaget's period of intuitive thought (age four to seven) is still influential with those children in this study. Even though a transition to increased symbolic functioning is taking place during this period, the child is still egocentric, dominated by his perceptions with his judgements very subjective, which is not necessarily a bad situation to be in, although often this is the way reality appears to a child because of the feedback he receives from teachers, parents, etc.

The phenomenal manifestation of this intuitive period is that children are able to handle many kinds of problems intuitively; that is, they are able to solve the problems without being able to verbalize them. What is suggested by this, mentions Sigel (1964, pp. 242-243), is a need for teaching techniques in which children can work on certain problems without necessarily having to provide verbal explanations. Although this may seem contradictory to the proposition that the child's Verbalizations facilitates the acquisition of concepts, it would appear that there is sometimes reason to limit such emphasis. Assuming that the TAT cards used as cues for the Origin protocols are a valid stimuli, possibly the fact that the children in this study were in the intuitive period of cognitive development contributed to the results obtained in that the children may have intuited a complete story in their mind but did not bother to relate it to this experimenter in any more detail than they felt was necessary, which in the majority of incidences was very minimal.

In relation to this, Sigel (1964, p. 243) believes that a willingness of the teacher to accept relatively poorly articulated expressions without negative evaluation may sometimes have a positive effect, potentially providing a basis for the child to enhance his intellectual development. As mentioned in the Introduction to this study, this is the underlying philosophy of Rogers' theory of education and conjoining this is that question which motivated this research in the first place: how to best present the various subject areas to the child in school?

It is here that the existential school, Piaget included, stresses the relevancy of the individual's action patterns. Cognitive change is made possible by the active interaction of the child and his

surrounding physical and social environment with experience in the classroom being no exception. In emphasizing the importance of a relevant and cogent teaching strategy, Piaget (cited in Sigel and Hooper, 1968, p. 429) mentions that

"Experience is always necessary for intellectual development...but I fear that we may fall into the illusion that being submitted to an experience (a demonstration) is sufficient for a subject to disengage the structure involved. But more than this is required. The subject must be active, must transform things, and find the structure of his own actions on the objects."

It is this cognitive reorganization made available by "self-discovery" in the classroom which Piaget, along with Dewey and Montessori, Rogers, Maslow, DeCharms and many others, stresses as a crucial element.

The child must be actively engaged if the learning process is to be effective and a factor which contributes to the success or failure of such an engagement is whether or not one of the major goals of schooling is to help children to be personally responsible for their behavior. For they will never learn inner control as long as the teacher maintains strict control within her sphere. Children must be taught to be responsible Origins. There must be a loosening of the reins by the teacher if "self-discovery" and intellectual development are to proceed as they should (DeCharms, 1969, pp. 9-10).

#### Summary

A theoretical and empirical linking is made between Rogers' theory of creativity and DeCharms Origin Syndrome. To directly test this linking, 60 children from six first grade classrooms were involved in a year long study which investigated the relationships between classroom

environment and creativity, the relationship between classroom environment and the Origin Syndrome, and the possibility of a positive relationship between creativity and Originness.

It was concluded that there is a significant partial effect on creativity due to classroom environment: indirect or non-authoritarian classrooms foster creativity, whereas direct or authoritarian classrooms hinder creativity. No significant change score was noted for the Origin Syndrome however, and no positive relationship between creativity and Originness was demonstrated.

Possible reasons as to why the above results were obtained are discussed and several recommendations are listed for future research.

Table 1

Pre I-D and Revised I-D Ratio Scores for the Original  
10 Classrooms and Post I-D and Revised I-D Ratio Scores  
for the Six Classrooms which were a Part of the Complete Study\*

	I-D Ratio		Revised I-D Ratio	
	Pre	Post	Pre	Post
Classroom 1	3.09	3.21	5.39	3.21
Classroom 2	2.60	2.11	3.37	6.09
Classroom 3	1.46	2.45	1.48	11.33
Classroom A	1.22		1.18	
Classroom B	1.04		1.10	
Classroom C	.96		1.36	
Classroom D	.91		1.63	
Classroom 4	.74	1.89	1.64	2.05
Classroom 5	.70	N/A	1.22	N/A
Classroom 6	.66	N/A	1.40	N/A

\* Classrooms 1-3 are indirect classrooms  
Classrooms A-D are the ones dropped from this study  
Classrooms 4-6 are direct classrooms



Table 2

Total/Unique Number of Responses for Indirect  
Classrooms and Direct Classrooms on Creativity Measure\*

	Boys				Girls			
	Pre (A)	Post (B)	Pre (B)	Post (A)	Pre (A)	Post (B)	Pre (B)	Post (A)
	T/U	T/U	T/U	T/U	T/U	T/U	T/U	T/U
Room 1 (n=9)	77/23 111/18	95/24 221/73	119/23 102/29	100/26 272/166	117/35 104/46 143/39	97/25 119/34 204/72	59/10 118/41	39/7 194/83
Room 2 (n=9)	127/49 75/32 113/52	180/43 259/82 169/65	128/60 106/41	171/97 99/35	149/61 96/39	201/89 183/55	81/9 91/20	82/30 106/33
Room 3 (n=9)	113/31 101/35	161/36 225/105	101/37 101/22	144/66 151/67	119/42 122/47 106/38	170/51 187/62 249/89	91/25 72/12	115/60 149/66
Room 4 (n=9)	137/55 189/69 96/28	198/89 214/104 222/70	63/9 97/18	125/52 109/35	119/46 103/36	199/79 159/34	127/42 155/43	162/76 215/85
Room 5 (n=8)	162/59 90/32 111/23	188/80 173/75 113/21	93/31 89/30	92/27 136/78	49/18	73/15	96/25 92/24	107/48 133/40
Room 6 (n=10)	100/24 131/46 96/29 129/56	96/26 126/27 80/11 151/48	121/42	109/38	113/42 136/38	112/42 104/23	112/30 88/23 106/28	96/41 94/33 84/24

\* see Table 1 for type of classroom

Table 3  
Analysis of Total Responses from the Creativity Measure

Source	SS	df	MS	f
Total	126466.20	53		
I-D	12757.40	1	12757.40	5.76*
Order	6240.02	1	6240.02	2.82
Sex	2292.84	1	2292.84	1.03
I-D X Sex	1546.46	1	1546.46	.70
I-D X Order	1446.70	1	1446.70	.65
Order X Sex	-668.90	1	-668.90	-.30
I-D X Order X Sex	926.40	1	926.40	.42
Error	101925.28	46	2215.80	

\* p < .025

Table 4

Analysis of Unique Responses from the Creativity Measure

Source	SS	df	MS	f
Total	40019.04	53		
I-D	2507.85	1	2507.85	3.40
Order	1949.45	1	1949.45	2.65
Sex	765.58	1	765.58	1.04
I-D X Sex	514.43	1	514.43	.70
I-D X Order	41.22	1	41.22	.06
Order X Sex	307.00	1	307.00	.42
I-D X Order X Sex	46.60	1	46.60	.06
Error	33886.91	46	736.67	

Table 5

Change in Number of Total/Unique Responses Averaged per Child and  
per Classroom from Pretesting to Posttesting on the Creativity  
Measure\*

	Average Change Score per Subject per Class	Average Change Score per Subject for Sub-Groups I-D
Room 1	47.11/27.11	
Room 2	53.78/23.89	55.56/28.59
Room 3	69.44/34.78	
Room 4	57.44/30.89	
Room 5	29.13/15.38	26.19/13.64
Room 6	-8.00/-5.33	

\* see Table 1 for type of classroom

Table 6

Pre and Post Scores for Creativity Measure (Total/Unique) and  
Origininess Measure for Indirect and Direct Classrooms\*

Boys					Girls			
	Pre		Post		Pre		Post	
	Crea	O	Crea	O	Crea	O	Crea	O
Room 1 (n 5)	77/25	5	95/24	10	117/35	2	97/25	8
	111/18	0	221/73	4	143/39	0	204/72	4
					59/10	3	39/7	0
Room 2 (n 4)	75/32	4	259/82	7	96/39	4	183/55	3
					81/9	0	82/30	3
					91/20	0	106/33	1
Room 3 (n 5)	113/31	3	161/36	8	119/42	1	170/51	5
	101/37	7	144/66	7	91/25	4	115/60	8
					72/12	6	149/66	7
Room 4 (n 5)	137/55	4	198/89	6	119/46	4	199/79	10
	189/69	1	214/104	7	127/42	1	162/76	6
	97/18	1	109/35	4				
Room 5 (n 4)	162/59	1	188/80	2	96/25	3	107/48	6
	111/23	1	113/21	1				
	93/31	0	92/27	8				
Room 6 (n 5)	100/24	2	96/26	4	136/38	0	104/23	2
	96/29	0	80/11	3	112/30	1	96/41	2
	131/46	2	126/27	10				

\* see Table 1 for type of classroom

Table 7  
Analysis of Origin Scores

Source	SS	df	MS	f
Total	186.68	27		
I-D	8.04	1	8.04	.84
Sex	6.04	1	6.04	1.11
I-D X Sex	-0.68	1	-0.68	-0.09
Error	173.29	24	7.22	

Table 8

Change Scores Averaged per Child and per Classroom  
on the Origin Measure\*

	Average Change Score per Subject per Class	Average Change Score per Subject for Sub-Groups I-D
Room 1	3.2	
Room 2	1.5	2.73
Room 3	3.5	
Room 4	4.4	
Room 5	3.0	3.53
Room 6	3.2	

\* see Table 1 for type of classroom

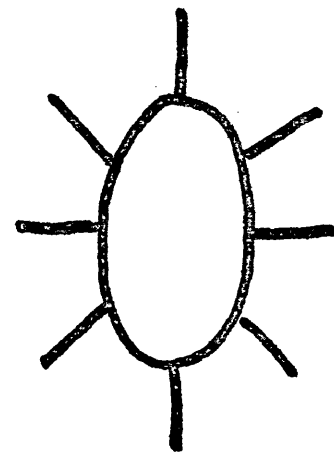
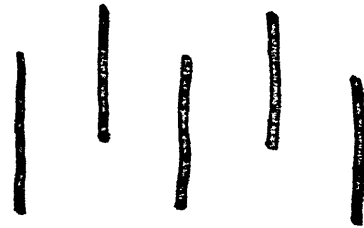
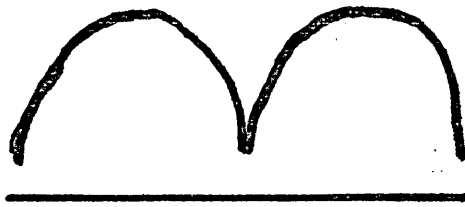
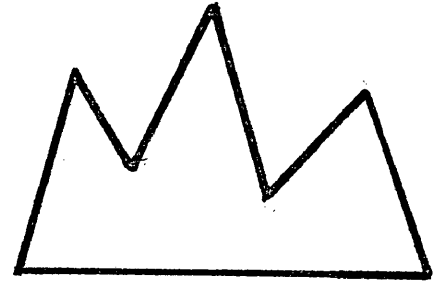
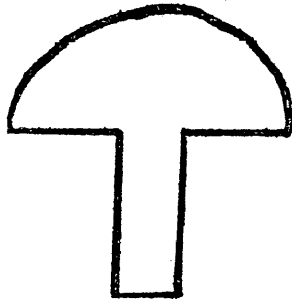
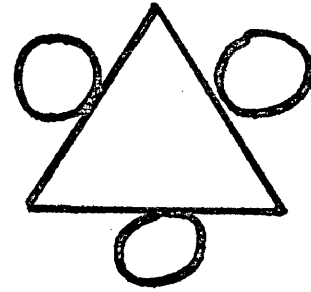
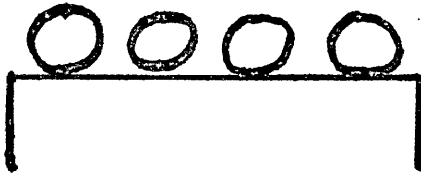


Fig. 1. Drawings of Abstract Patterns  
Top four patterns are from Form A  
Bottom four patterns are from Form B



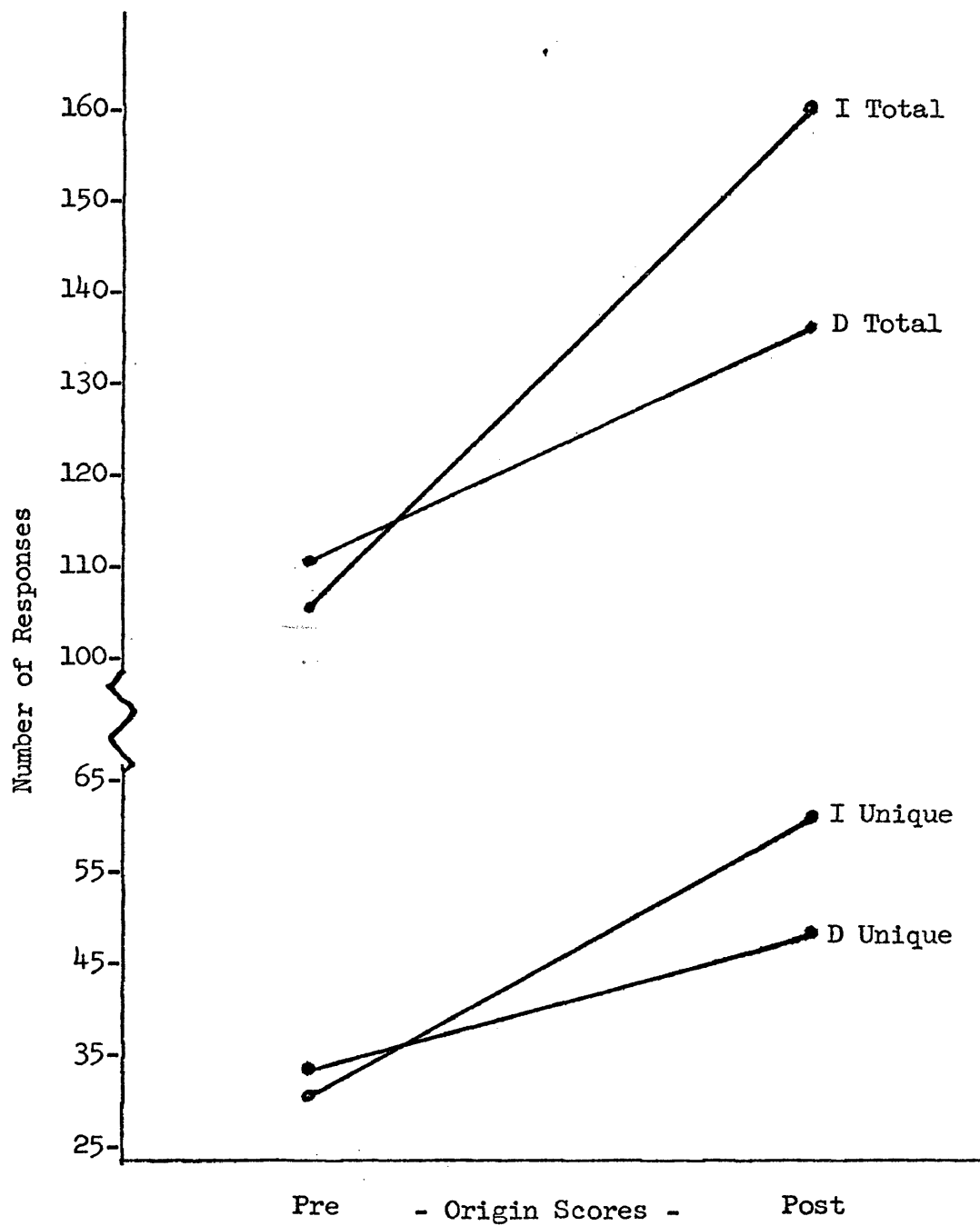


Fig. 2. Average Pre and Post Total and Unique Scores per Subject on the Creativity Measure\*

\* see Tables 3 - 5.

## Appendix 1

## Techniques of Creative Teaching\*

## Obstacles to Creativity:

- 1) the pressure to conform,
- 2) authoritarian attitudes and environments repress the creative potential of young people,
- 3) ridicule and similar attitudes destroy feelings of self-worth in students and therefore have a tendency to block off creative efforts,
- 4) those traits which make for rigidity of personality inhibit creative expressions,
- 5) an over-emphasis on such rewards as grades arouses defensive attitudes on the part of pupils and to that extent threatens inventiveness,
- 6) an excessive quest for certainty stills the creative urge,
- 7) an over-emphasis on success drains off energies from creative processes and focuses them upon outcomes, perhaps upon some status symbol, or on the merely instrumentally valuable goals which might have been achieved,
- 8) hostility toward the divergent personality, either on the part of teachers or peers, may serve as a cultural block; every creative act is unique, idiosyncratic, nonconforming, and often curiously onesided,
- 9) an intolerance of the "play" attitude in connection with school work characterizes the environments which stifle creativeness; innovation requires freedom to toy with ideas and materials, encouragement to deal with irrelevancies, and permission to dip into fantasy and make-believe.

### Aids to Creative Teaching:

1) the creative teacher provides for self-initiated learning on the part of the pupils;

2) the creative teacher sets up nonauthoritarian learning environments. Conditions of freedom facilitate creativeness. The kind of freedom which is requisite to creativity is psychological freedom, symbolic freedom, the freedom experienced in a spontaneous expression and not an overt, aggressive freedom, not license;

3) the creative teacher encourages pupils to over-learn; to saturate themselves with information, imagery, and meaning;

4) the creative teacher encourages creative thought processes. She stimulates pupils to seek for new connections among data, to associate, imagine, think up tentative solutions to problems at hand, make wild guesses, hitchhike ideas, build on the ideas of others and to point these ideas in new directions;

5) the creative teacher defers judgement. She does not block off an exploratory effort by announcing outcomes or by providing solutions;

6) the creative teacher promotes intellectual flexibility among the students;

7) the creative teacher encourages self-evaluation of individual progress and achievement. She rejects group norms and standardized tests on the grounds that they are both inappropriate and harmful to creative learning;

8) the creative teacher helps the student to become a more sensitive person - to become more sensitive to the moods and feelings of other people, to all external stimuli, to social and personal problems;

to academic ones, to public issues, and even to the commonplace and the unknown;

9) the creative teacher knows how to make use of the question;

10) the creative teacher provides opportunities for students to manipulate materials, ideas, concepts, tools and structures;

11) the creative teacher urges pupils to consider problems as wholes, to emphasize total structure rather than the piecemeal, additive elements.

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